Chan DK, Johnson MI, et al. Electrical Acustimulation of the Wrist for Chronic Neck Pain: A Randomized, Sham-controlled Trial Using a Wrist-Ankle Acustimulation Device. Clin J Pain 2009;25:320-326.

Design: Randomized clinical trial

Population/sample size/setting:

- 49 patients (18 men, 31 women, mean age 53) treated for chronic neck pain at an outpatient physiotherapy department in Hong Kong
- Inclusion criteria were age 18-75 and 3 months or more of mechanical neck pain with or without referral to the proximal extremity
- Exclusion criteria were definite neurologic deficit due to rheumatic/connective tissue disease, metabolic or endocrine disease, neurologic disease, neoplasms, fractures, and dislocations

Main outcome measures:

- All participants attended clinic twice per week for 4 consecutive weeks for a total of 8 treatment sessions of 30 minutes duration, during which a program of 10 minutes of standardized neck exercises was performed
- In addition to neck exercises, each participant had a wrist-ankle acustimulator device with 6 electrodes attached to the dorsal aspect of the wrist (3 cm above the crease) on the side of the predominant neck pain
- Acustimulator was randomized to deliver pulsed electrical currents (n=22) or sham current (n=27)
- Real pulsed current was delivered in 6 second cycles, with a frequency of 2 Hz for 3 seconds and 100 Hz for 3 seconds, and the intensity of the stimulation was adjusted by the participant until a “strong but nonpainful” sensation was felt
- Sham current was delivered with identical device placement, but the participants were told that the study was testing different kinds of acustimulation, and that there may or may not be a tingling sensation with the treatment
- Numerical Rating Scale (NRS) was the principle pain outcome; a Neck Pain Questionnaire (NPQ) was the principal pain/disability outcome, and the Pain Self-Efficacy Questionnaire (PSEQ) was the principal measure of generalized self-efficacy and confidence in performing activities
- Active acustimulation had superior pain relief on NRS (e.g., 70% of participants had a 30% reduction and 40% had a 50% reduction at the end of treatment); sham acustimulation had no significant reduction in pain at any time point
- Similarly, NPQ and PSEQ had significant reductions in the active acustimulation but not in the sham group
- Benefits at the end of the 4 week treatment period were maintained at the follow-up measure done at 4 weeks after treatment ended

Authors’ conclusions:

- Electrical acustimulation of the wrist improved pain and self-assessed disability compared to sham acustimulation at the end of 4 weeks of treatment and at the end of a 4 week follow-up period
- The lack of patient blinding was due to the perceptible effect of the active current and its lack in the sham group
- Future studies should monitor patients' beliefs and expectations about the interventions they are receiving
- The fixed electrode montage makes it unlikely that they overlay acupuncture points
- Wrist acustimulation combined with neck exercise is an effective option in the treatment of chronic neck pain

Comments:

- Efforts to control bias in treatment assignment (randomization and concealment of allocation) were adequate, but, as the authors point out, there were potential biases arising from the differences in perceptibility of the two interventions
- Telling participants in the sham group that different kinds of acustimulation were being tested, and that the current may be present but not felt, could compensate to some degree for the lack of blinding, reducing the bias, but the participants were not asked about their guesses about which group they were in, and this cannot be assumed
- Presumably, the exclusion of patients with neurologic disease or deficit means that patients with cervical radiculopathy were excluded; however, since they were included with and without referral to the proximal extremity, this issue is not completely clear
- Since acupuncture points were not involved, it is not clear why this intervention was called acustimulation rather than electrical stimulation

Assessment: Adequate for some evidence that electrical stimulation of the wrist during the performance of neck exercises can reduce neck pain more than neck exercises alone